

# LAUTENBACH (L. J.)

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Amount of Astigmatism.

BY

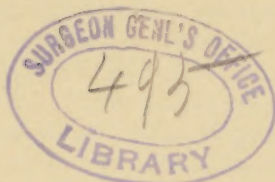
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THE VALUE OF THE OPHTHALMOMETER  
IN THE DETERMINATION OF THE AXIS AND  
THE AMOUNT OF ASTIGMATISM.

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THE results herewith presented are drawn from the study of almost one thousand three hundred eyes with the ordinary tests (the ophthalmoscope, retinoscope, etc.) and the ophthalmometer, and the subsequent determination of the subjective refraction by mydriatics, either atropine or homatropine.

My first experience with the ophthalmometer was with the Helmholtz instrument. This measured the corneal curvatures very accurately, but required quite a long sitting to complete the examination, sixteen readings being necessary for each eye.

It is mainly on this account that it has proved to be a useless instrument in the working office, being, however, of great value for scientific research.

Later (in 1892) I began to use the Javal-Schiötz instrument, and now use it regularly in every case. Since I pur-

chased it I have examined the eyes of over six hundred patients.

I consider the make of the instrument and its mode of use responsible for much of the difference in results of ophthalmometry, or rather, as it should be termed, keratometry.

My instrument is one made by Meyrowitz, of New York. It is solidly constructed with a good metal base, and its head-rest is attached by a metal support directly to the base; there is no vibration and no give to it; the parts are all fixed and firm. I have four sixteen-candle-power incandescent lights attached to the head-rest to illumine the disc.

After the instrument had been constructed and delivered to me I had the arc set in proper position and the prisms overhauled by Mr. Seidel, of Philadelphia. After this was done the results were markedly more accurate than before, as the slightest deviation in the setting of the arc modifies the reading of the axis and the amount of astigmatism.

The instrument is mounted on a firm typewriter stand with an overlapping leaf to give room underneath for the patient's knees as well as to give him a place to rest his arms and hands.

In the barrel of the instrument on the center of the lens I have fastened a square of green paper of five millimetres. This is a most necessary procedure, as by no other method have I been able to fix the patient's eye so well.

Fastened to the head-rest of the instrument I have a pair of straps by means of which I prevent any forward or backward motion of the head.

In order to have the patient's head and neck comfortable when resting in the headpiece, I have a chair which I raise or lower to the proper height.



In taking my readings I turn on the electric current, place the patient in the chair, raise it to the proper height, have him rest his chin on the chin rest and press his forehead against the upper part of the rest, place his eyes at the proper height and see that they are on a level, tighten the straps just below the occipital protuberance, seeing that he is resting his feet firmly on the floor and his arms on the table; then, the spider's web being in proper position, I cover his left eye with the slide and direct him to look at the square in the barrel.

I then focus the image accurately by raising or lowering the screw, pushing the barrel to the right or left and drawing it to or from my patient. I commence invariably with my indicator pointing to  $90^{\circ}$  and bring the mires in apposition at this point, the center of the line of apposition being at the cross of the spider's web.

If the central lines are not continuous I revolve to the right or left until they are continuous, and then again bring the mires into apposition. I then note this axis, and also the radius of curvature.

I then turn the indicator just  $90^{\circ}$  from this, and if the lines are again continuous I note this axis and the amount of overlapping of the mires or their divergence; then again bringing the mires into apposition, I again note the corneal radius.

If the lines are not continuous I revolve to right or left until they are so, and proceed as before indicated. I then examine the left eye in the same way.

Usually the whole procedure—the examination of both eyes—will not take over three minutes, and the results are so accurate that subsequent examinations give absolutely the same results.

I speak of this accuracy as I have noted others who indicate that frequent examinations are necessary. This ac-

curacy and time saving is, I think, the result of the perfect illumination and the fixed and accurate position, as well as the ease and comfort in which the patient is placed.

Occasionally I find a cornea very hazy. In these cases I use a drop of castor oil instilled into the eye, and, closing the lids, rub the eye very gently. Again I find the image becoming hazy while under examination. This is due occasionally to a lack of secretion, but more frequently to an excess. In these cases I direct the patient to wink two or three times or to close the eye for a few moments and then continue the examination. Occasionally when the arc is vertical or nearly so the image of the white parallelogram is either indistinct or it disappears; this is obviated by directing the patient to open his eye wider, a heavy eyelid being the cause of it.

I am more and more convinced that Burnett's allowance of 0.5 D. as the difference between the astigmatism of the ophthalmometer and the subjective astigmatism is too high. I make an allowance of 0.37 D., subtracting this if the astigmatism is with the rule and adding it if against the rule.

My cases have been so numerous and I have been so busy in many ways that I have not thoroughly analyzed them, but will here give you the results—the practical results:

1. That the ophthalmometer of Javal and Schiötz will determine the axis and amount only of the corneal astigmatism.

2. That it will determine accurately the axis of astigmatism in between eighty and ninety per cent. of the cases.

3. That in about forty five per cent. of the cases (making the correction of 0.37 D.) it will determine the amount of the astigmatism.



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